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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE  
THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

Group Art Unit: 1621  
Examiner: Mr. Alan M. Siegel

In Re PATENT APPLICATION of

Applicants: Pascal PENNETREAU et al. )

Appln. No.: 08/549,322 )

Filed : October 27, 1995 )

For : PROCESS FOR THE PREPARATION )  
OF 1-CHLORO-FLUOROETHANE AND/ )  
OR 1,1-DIFLUOROETHANE )

Atty. Dkt.: SLVAY 0829 )

REPLY BRIEF

August 31, 1998

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This brief is filed in triplicate.

SUMMARY OF THE INVENTION

The claims are directed to introducing vinyl chloride, which is a gas boiling at  $-13.4^{\circ}\text{C}$ , together with HF, into a solvent which is an organic solvent consisting of at least one saturated halogen-containing hydrocarbon reacting in the liquid phase. Claim 1 recites that products include 1-chloro-1-fluoroethane, or 1,1-difluoroethane or mixtures thereof,

"with reduced formation of heavy halogen-containing side products (claim 1)"

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## ARGUMENT

I. The U.S. Patent and Trademark Office has not adhered to the legal underpinnings of *Ochiai*, in the examination of the instant claims, to the appellants' detriment.

The Patent and Trademark Office takes a position in the Examiner's Answer at page 5 that "*Ochiai*" (*In re Ochiai* 37 USPQ 2d 1127 at 1131 (Fed.Cir. 1995)) "supports" the instantly appealed rejection. In applicants' view, dicta in *Ochiai* are applicable here:

Firstly the Court stated,

"The test of obviousness vel non is statutory. It requires that one compare the claim's "subject matter as a whole" with the prior art "to which said subject matter pertains." (*In re Ochiai* 37 USPQ 2d 1127 at 1131 (Fed. Cir. 1995)).

In applicants' view, the U.S. Patent and Trademark Office has not compared the appealed claims with the prior art to which said subject matter pertains. This is discussed below under the heading denoted "II."

In addition, the Court stated,

"In sum, as we clearly indicated in *In re Dillon*, a recent in banc decision, "[w]hen any applicant

properly presents and argues suitable method claims, they should be examined in light of all... relevant factors, free from any presumed controlling effect of Durden..." (In re Ochiai 37 USPQ 2d 1127 at 1133 (Fed.Cir. 1995))

In appellants' view, the U.S. Patent and Trademark Office has not examined the rejected claims in light of all relevant factors, which includes evidence present in this record. This is discussed below under the heading denoted "III."

II. The U.S. Patent and Trademark Office has not compared the applied art with the recitations in the appealed claims which include the metes and bounds of the process claims, including the reactants, the reaction, the by-products and the products.

In applicants' view, the primary reference to Wairaevens (sic, a patent printing error, the correct name is Walraevens) does not describe the production of 1-chloro-1-fluoroethane, or 1,1-difluoroethane or mixtures thereof. This is of course a difference between the applied art and the appealed finally rejected claims. Wairaevens does not describe the same reactant or the same products of the claims. Wairaevens's relates to reacting hydrogen fluoride

with vinylidene chloride, in a medium containing at least 40 mol percent of 1,1-dichloro-1-fluoroethane. **Neither vinylidene chloride nor 1,1-dichloro-1-fluoroethane are recited as elements in the rejected claims.**

Neither the Wairaeven reference nor Rao can create an expectation concerning the claimed products of the invention, 1-chloro-1-fluoroethane, or 1,1-difluoroethane.

RAO relates to treating **alkenes** and does not describe the products, produced in accordance with the invention 1-chloro-1-fluoroethane, or 1,1-difluoroethane or mixtures thereof. Rao contains no examples using vinyl chloride or vinylidene chloride as starting material. No conclusion concerning their respective behaviour can be given. In appellants' view, there is not a shread of support in Rao itself, or in Lovelace, for the conclusion "Rao clearly established that vinyl chloride and vinylidene chloride would be expected to react similarly with HF."

Lovelace describes the 1,1-difluoroethane as the product resulting from the addition of HF to **acetylene**.

Parenthetically it appears that, if higher temperatures are employed, Lovelace makes 1-chloro-1-fluoro ethane at 150°C.

**In appellants' view, the examination has not included a comparison of the reference products to the recitation of 1-**

chloro-1-fluoroethane, or 1,1-difluoroethane or mixtures thereof. These are express recitations in the claims.

In appellants' view, the U.S. Patent and Trademark Office has not fully considered the claim language

with reduced formation of heavy halogen-  
containing side products

As noted at page 5 of the main brief, that claim feature is explained in the specification Examples 1, 2, and 4 at pages 9 to 11 of the application as filed which show formation of large amounts of heavy by-products in the reaction between vinyl chloride and HF in the absence of said solvent. As the Board will note, from 25 to 46% of the vinyl chloride is converted in these conditions into heavy side products. Cf. APPENDIX 3 to the main BRIEF. These results are probative and must be considered as discussed below.

Moreover, in appellants' view, the U.S. Patent and Trademark Office has not compared the reference description(s) to the claim language,

introduced into an organic solvent consisting of at least one saturated halogen-containing hydrocarbon.

The Patent and Trademark Office PTO states in response to arguments in the main Brief:

"The solvent present in the instantly claimed process reads on and includes the product produced and it is

clear that at some point in the reaction the claimed amount of product would be present in the reaction zone. (Examiner's Answer page 5 last paragraph, emphasis added).

Comparison of the rejected claim language to the U.S. Patent and Trademark Office's interpretation of the facts, reveals that the U.S. Patent and Trademark Office did not appear to recognize the word "introduced" as a feature of Claim 1.

Lastly, the specified use of vinyl chloride in the "liquid phase" does not appear in the U.S. Patent and Trademark Office's consideration of the claims vis-a-vis the applied art. **Failure to compare the individual claim recitations and the applied art is legal error.**

**III. The evidence which has been presented and argued has not been considered in the reasons for rejection.**

This is contrary to the dictum in *Ochiai* which recites that "suitable method claims... should be examined in light of all... relevant factors, free from any presumed controlling effect of Durden... (In re Ochiai 37 USPQ 2d 1127 at 1133 (Fed.Cir. 1995) emphasis added)

Exhibit 2 to the main Brief is the March 24, 1995 Janssen Declaration and Exhibit 3 is a copy of the comparative Examples of the application.

Those comparative Examples (Example 1 being a comparison with DE 859887 and Example 4 being a comparison with U.S. 2495407) and referred above in II., tend to show that in the absence of the organic solvent consisting of at least one saturated halogen-containing hydrocarbon heavy side products are formed. Specifically, the objective evidence that the problem which is solved by the invention is the formation of heavy side products can be found in the examples: comparative Examples 1, 2 and 4 (from 25 to 46% of the vinyl chloride are converted into heavy side products) to be compared with Examples 3 and 5-19 (a maximum of 13% (Example 10) of the vinyl chloride is converted into heavy side products.) These are, of course, relevant and must be considered, In re Soni 34 USPQ 2d 1684 (Fed. Cir. 1995). The comparisons in the specification are more relevant than the description in Wairaevens reference method; the comparisons are related to the improvement of the invention of the instantly appealed finally rejected claims. The comparisons in the Examples relate to vinyl chloride reactions. Accordingly, the comparative Examples in the specification are more relevant to the rejected claimed subject matter, than is Wairaevens

which does not relate to the use of vinyl chloride. In re Grasselli, 218 USPQ 769 at 779 (Fed. Cir. 1983) and In re Fenn, 208 USPQ 470 (CCPA 1981.)

Moreover, the U.S. Patent and Trademark Office had not made any express finding concerning the Jansen Declaration except that it is said to be not persuasive. (Cf. page 6 of the Examiner's Answer). The Declaration filed on March 24, 1995 evidences the fact that vinyl chloride is more highly reactive than vinylidene chloride and thus has a far higher tendency to form heavier than vinylidene chloride.

Lack of findings concerning the comparative Examples of the application and those in the Janssen declaration is contra the legal framework propounded in the Ochiai opinion which is excerpted above in.

IV. The word "analogous" reappears throughout the Examiner's Answer. The word "analogous" as used here requires use of the rejected claimed recitations in combination with the applied art, which is in contravention of the statutory language in Section 103(a) which specifies that only prior art evidence can be used to reject a claim. There is no way that Rao alkenes or Lovelace's acetylene can



produce heavy by products which are oligomers of vinyl chloride.

The Patent and Trademark Office uses the word "analogous" in three paragraphs (last paragraph of page 3 of the Examiner's Answer and the first two paragraphs of page 4 of the Examiner's Answer) in conjunction with findings concerning Wairaevens and with respect to recitations in applicants' claims concerning reactant, process and products.

In the sense that the word "analogous" is used in the Examiner's Answer, water,  $H_2O$ , and  $H_2S$  might be considered analogous; but the capabilities of the two, one containing O (oxygen) and the other S (sulfur) are entirely different.

It is in such a vein that the information concerning "reactivity" was presented by the applicants and substantially disregarded by the Examiner's Answer at page 6 third paragraph. The record does not reveal any finding by the U.S. Patent and Trademark Office concerning the problem solved by the instant invention or of the problem itself which is the production of a great quantity of heavy by-products in the liquid reaction medium of the rejected claims. The production of heavy components is discussed in the specification at page 1 and 2. Referring to U.S. Patent 2,495,407, the specification at page 1 states

[T]hese known processes lead to the formation, sometimes in very large amounts, of heavy halogen-containing side products which are mainly formed of oligomers of vinyl chloride, which partly contain fluorine. The formation of these side products seriously affects the reaction yields of 1-chloro-1-fluoroethane and of 1,1-difluoroethane. In addition, the clean destruction of these halogen-containing side products requires the implementation of difficult and very expensive techniques.

(specification page 1 lines 27-36)

The problem is not, as asserted at page 4 lines 10-12 of the Examiner's Answer, to obtain "a known useful product." Also please note that the Examiner's position is that

The instant rejection is not predicated on the assumption that vinyl chloride and vinylidene chloride are identical but only that there would have been a reasonable expectation that some useful analogous product would be obtained. This expectation is confirmed by the showing in said declaration. (Examiner's Answer page 6)

Rather the problem is to provide a highly efficient process which limits the unwanted formation of heavy halogen-

containing side products, as discussed at page 2 of the specification.

None of the applied art deals with the problem solved by applicants' invention. Moreover, the combination of applied art does not put the express terms of the claims within the possession of the public. As noted above, Wairaevens relates to processes with the reactant **vinylidene chloride**, Rao relates to the use of **alkenes** and Lovelace relates to reactions with **acetylene** as the reactant. In summary there is no way that Rao's **alkenes** or Lovelaces' **acetylene** can produce **heavy halogen containing side products**. Moreover, none of the applied art relates to the reaction of vinylchloride and HF in the liquid phase. Accordingly Rao and Lovelace cannot make up for the deficiencies of Wairaevens.

The Patent and Trademark Office makes a determination

The primary reference discloses a process wherein vinylidene chloride reacts in a similar manner with HF to produce the corresponding products.

(Examiner's Answer page 5)

In applicants view the words "similar" and "analogous", in the Examiner's Answer, as reflected by the foregoing excerpt from page 5 of the Examiner's Answer, leads to a ground of

rejection based on Wairaevens in which, an unknown reactant, an unknown process and an unknown product, somehow become "analogous" under 35 USC 103(a). A rejection under 35 USC 103(a) cannot be based on the "unknown." Reversal of the Final rejection is respectfully solicited.

Procedurally, the following item in the Examiner's Answer is noted.

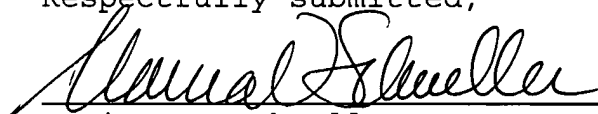
In paragraph (7) of the Examiner's Answer, page 2, it is alleged that, the U.S. Patent and Trademark Office does not agree that the claims stand or fall together,

"because not one argument is presented which relates to limitations not included by Claim 1."

Applicants respectfully direct the honorable Board's attention to the main Brief, page 8 penultimate paragraph, in which appealed rejected claim 11 is separately argued.

Reversal of the Final Rejection and an early allowance are respectfully solicited.

Respectfully submitted,



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